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A nomogram model to predict the acute venous thromboembolism risk after surgery in patients with glioma

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Abstract

Introduction: Postoperative venous thromboembolism (VTE) is a common complication for glioma patients, with an incidence rate of about 20 %. The purpose of this study was to explore the risk factors of acute VTE after glioma surgery, which may provide an essential reference for clinical guidance on the prevention of acute VTE.

Materials and methods: A total of 435 patients who underwent glioma surgery from 2012 to 2021 were included in this study. Duplex ultrasonography was performed routinely 3-5 days after the surgery to define VTE. Univariate and multivariate logistic regression analyses were performed to explore the independent predictor of acute VTE after glioma surgery and use these selected risk factors to construct and validate a nomogram.

Results: Several risk factors for predicting acute VTE after glioma surgery were identified and used to build the nomogram: age, operation time, systemic immune-inflammation index (SII), hypertension, and diabetes mellitus. The area under the curve of the nomogram was 0.834, indicating good discrimination. Hosmer-Lemeshow of the calibration curve was 3.05 (P = 0.98), showing a high degree of agreement between the prediction and actual outcome. Decision curve analysis indicated that the nomogram model was helpful when the incidence of VTE was 5-80 %.

Conclusions: A nomogram to predict acute VTE after glioma surgery was constructed and validated.

Clinicians can use this predictive model to achieve risk assessment and take different treatment measures to prevent acute postoperative VTE and improve patients' quality of life effectively.

Keywords: Acute venous thromboembolism; Glioma surgery; Nomogram model; Preoperative blood biomarker; Systemic immune-inflammation index.

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